4 Multiplying using place value

We are learning to multiply using place value.

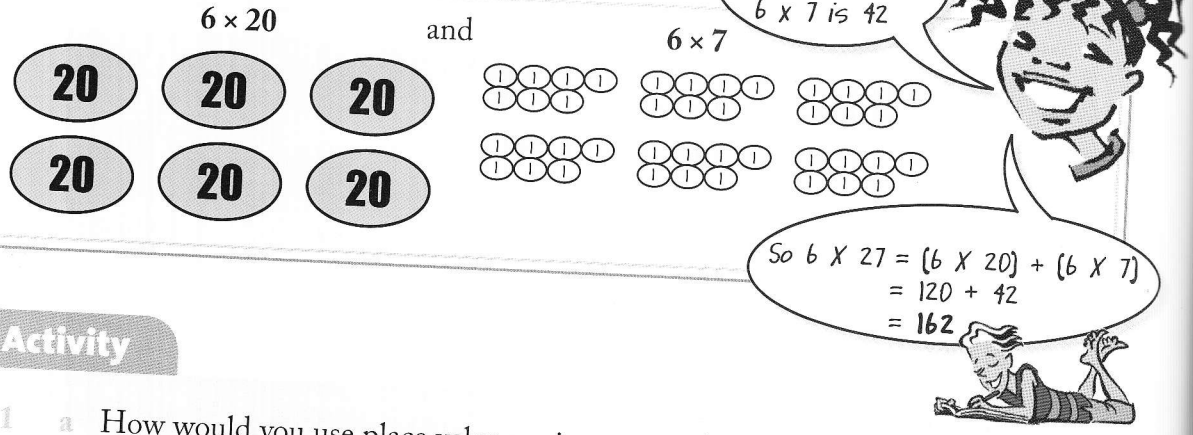
NUMBER KNOWLEDGE

Numeracy Book 4
Place Value Houses
Tens in Hundreds and More
Arrows
Close to 100
Number Hangman
Zap

In *this* book
Thousands, hundreds, tens, ones and tenths ... page 152
Counting on and back ..... page 161

Place value materials such as beans, blocks or play money, containers, stickies.

Example 6 × 27 can be shown as



Activity

1 a How would you use place value equipment to show 3 × 52?
Draw it in your book.
b Write the equations that show your diagram.
c What is the answer to 3 × 52? Show how you worked this out.

2 a How would you show 6 × 38 using place value equipment?
Draw it in your book.
b What is the answer to 6 × 38?
Write down how you worked it out.

3 Using place value materials show a partner how to work out one of these.
4 × 23 6 × 37 46 × 8

4 Maggie said that 7 × 26 is the same as 26 × 7. Is she right?
Explain to a friend why or why not.
Imagine what these would look like with place value equipment.
Which way makes it look easier to solve?
Write down or draw your explanations.

Use standard place value to solve multiplication problems.
Multiplication Smorgasbord Book 6

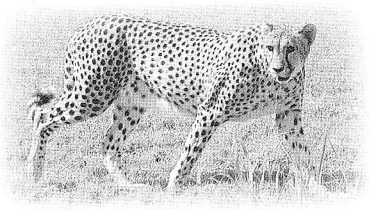
5 Imagine the place value equipment to help you do these.
Show how you did each.

a 6 × 30	**b** 7 × 80	**c** 40 × 9	**d** 70 × 7	**e** 4 × 33	**f** 8 × 27
g 54 × 6	**h** 46 × 8	**i** 67 × 4	**j** 3 × 87	**k** 38 × 6	**l** 7 × 96

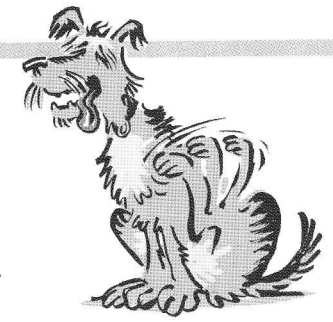
6 A glacier in Norway moves about 24 m per day.
How far would it move in **a** 4 days? **b** 1 week? **c** 12 hours?

7 A game that Sam and Millee are playing has small packs of cards.
Each pack has eight cards. There are 37 packs of these cards.
How many cards does the game have altogether?

8 A cheetah can run about 27 metres per second but can only keep this speed up for a few seconds.
How many metres would a cheetah run at this speed in
a 4 seconds? **b** 6 seconds?
c 8 seconds? **d** half a minute?



9 A mobile phone company has a special deal that allows you to send 23 text messages each hour on the 23rd of December.
Wiremu decided to text all of his friends and relatives.
How many texts could he send in
a 4 hours? **b** 7 hours? **c** Half an hour?



10 Challenge

Did you know that.....?

		W													
468	882	70	432		384	256	230	96							
360	882	434	153		432	210	882	212	256	468	384	432			

Make a copy of this box.
Write the letter beside each question above its answer in the box

W 35 x 2 = 70	E 2 x 48 =	T 5 x 42 =	R 3 x 51 =	H 6 x 64 =
M 53 x 4 =	U 62 x 7 =	V 46 x 5 =	A 32 x 8 =	F 72 x 5 =
S 6 x 72 =	O 9 x 98 =	C 9 x 52 =		

Example 7×245 You could use a **place value** strategy to work this out.

$245 = 200 + 40 + 5$

$7 \times 245 = (7 \times 200) + (7 \times 40) + (7 \times 5)$
$= 1400 + 280 + 35$
$= 1000 + 400 + 200 + 80 + 30 + 5$
$= 1000 + 600 + 110 + 5$
$= \mathbf{1715}$

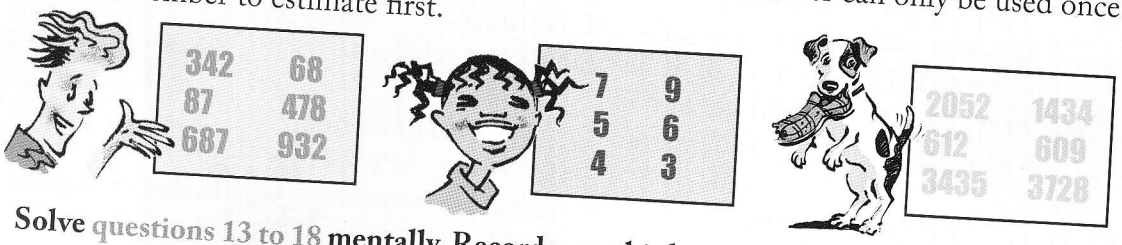
It is best to estimate the answer first.
7 x 245 is about
7 x 250 = 4 x 250 + 3 x 250
= 1000 + 750
= 1750
or 7 x 245 is about 8 x 250 = 2000.

There are other ways to work this out. You could use a different way.

11 Work out the answers to these using place value. Show how you did each.

a 5×45	b 87×4	c 8×76	d 69×4	e 7×360
f 8×590	g 860×3	h 920×9	i 3×491	j 4×837
k 339×6	l 893×6	m 7×549	n 586×9	o 947×7

12 Use one number from Sam's board multiplied by one number from Millee's board to make an answer that is on Baxter's board. Each number can only be used once. Remember to estimate first.



Solve questions 13 to 18 mentally. Record your thinking or show how you did each.

13 Mere's school is collecting books to send to a school in Africa.
The books are packed into boxes. Each box holds eight books.

a Mere's class collects 39 boxes of books.
How many books is this?

b By the end of the year the school has collected 435 boxes of books.
How many books is this?

c A courier company charges 15 cents to collect each box from the school.
How much does it cost for all the boxes to be collected?

14 A traditional size 6 egg is 45 g – 50 g.

a What is the least and most that half a dozen eggs will weigh?

b What about the least and most that a dozen eggs will weigh?

Use standard place value to solve multiplication problems.
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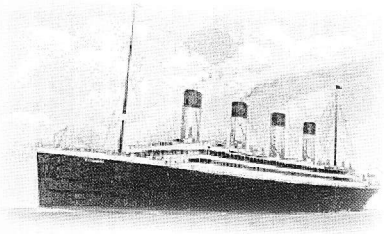
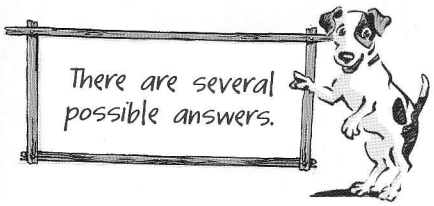
15 The Titanic had 800 bundles of fresh asparagus on board when she left port.
If each bunch weighed 280 g, how much did the bunches weigh altogether?



16 Amy and Shane found the website of the World Mouseclicking Competition.
Amy entered and found that her speed was 'Superb!' at 276 clicks a minute.
Shane's speed was 'Positively Bionic' at 348 clicks a minute.
How many clicks would Amy and Shane each make in
a 4 minutes?
b 7 minutes?
c a quarter of an hour?

17 On average Sam's baby sister's weight increased by 186 g per week for the first four weeks after she was born and then 789 g every four weeks for the next twenty-four weeks.
a How much weight did she gain in the first four weeks?
b How much weight did she gain over the whole time?
c If she had continued to gain weight over the whole time at the same rate as she did in the first four weeks would she have been heavier or lighter? How much heavier or lighter would she have been?

18 Find correct digits to go in each of these boxes.
a ? ? 8 × 9 = ? ? 3 ?
b 4 ? 6 × ? = ? 7 ? 4



19 Challenge Sam multiplied 4.83 x 5 like this.

$5 \times 4.83 = (5 \times 4) + (5 \times 0.8) + (5 \times 0.03)$
$= 20 + 4.0 + 0.15$
$= 24.15$

Use Sam's way to multiply these decimals.
a 4 x 1.3 b 7 x 4.7 c 8 x 3.8 d 9 x 2.34 e 6 x 2.79